

CLAIMS

1. An information processing device comprising:
 - a DRAM having a burst mode which burst-transfers data at successive column addresses;
 - one or more data processing units operable to issue an access request; and
 - an address conversion unit operable to convert access addresses which are included in the access request issued from said one or more data processing units,
- 10 wherein at least one of said one or more data processing units is operable to access an $M \times N$ rectangular area, where M and N are integers, and
- 15 said address conversion unit is operable to convert access addresses so that a column address of data at the $(K+m)$ th column, where K and m are integers and $m \leq M$, of an L th line, and a column address of data at a K th column of an $(L+n)$ th line, where L and n are integers and $n \leq N$, become successive.
- 20 2. The information processing device according to Claim 1, wherein some or all areas of said DRAM is a frame memory which stores image data, the rectangular area is M pixels $\times N$ lines in the image data, where M and N are integers, and said data processing unit is operable to perform one of motion compensation and motion estimation.
- 25 3. The information processing device according to Claim 2, wherein $n=2n'$ and n' is an integer.
- 30 4. The information processing device according to Claim 2, wherein another one of said data processing units is operable to access the image data on a line basis, and to successively read

out all data of $2n$ lines.

5. The information processing device according to Claim 2,
wherein said data processing unit is operable to decode an
5 inputted stream on a basis of two or more macroblocks, by motion
compensation,

said DRAM is operable to store the image data decoded by
said data processing unit,

10 said information processing device further comprises:
a memory featuring a smaller storage capacity and faster
access speed than said DRAM;
a data transfer unit operable to transfer data from said DRAM
to said memory; and
15 said data processing unit is operable to access the image data
stored in said DRAM as reference data.

6. The information processing device according to Claim 5,
wherein the image data stored in said DRAM is split into split
regions larger in size than the rectangular area, and

20 said data transfer unit is operable to transfer data on a split
region basis from said DRAM to said memory, based on the access
request from said data processing unit.

7. The information processing device according to Claim 6,
25 wherein said data transfer unit has a register which holds a
size of the split region.

8. The information processing device according to Claim 5,
wherein said data transfer unit is operable to transfer data
30 from said DRAM to said memory when a predetermined number n of
read-out requests are outputted from said data processing unit.,

9. The information processing device according to Claim 8,
wherein said data transfer unit has a register which holds the
size of the split region and the number n.

5 10. The information processing device according to Claim 5,
wherein said data transfer unit is operable to transfer the split
region which includes all rectangular areas, from said DRAM to said
memory when the access request from said data processing unit
requests the rectangular areas which are adjacent or overlapping.

10 11. The information processing device according to Claim 6,
wherein said data processing unit includes:
a motion vector estimation unit operable to estimate plural
motion vectors according to plural macroblocks from the inputted
15 stream;
a decoding unit operable to decode the inputted stream on a
macroblock basis, and to store the decoding result in said DRAM;
and
wherein a decoding sequence of the macroblocks is changed
20 based on the plural motion vectors so that addresses for accessing
said DRAM vectors become successive.

25 12. A data access method for accessing a rectangular area made
up of M pixels x N lines in image data from a DRAM, the DRAM having
a burst mode which burst-transfers data of continuous column
addresses, and storing the image data, said data access method
comprising:
an input step of inputting an access request for the
rectangular area; and
30 an address changing step of changing an access addresses
included in an access request issued in said access step,
wherein in said address converting step, addresses are

converted so that a column address of data at the $(K+m)$ th column, where K and m are integers and $m \leq M$, of the L th line, and a column address of the data at the K th column of the $(L+n)$ line, where L and n are integers and $n \leq N$, become successive.